CLAIMS

The following represents a complete list of the claims in the present application including all amendments made by this paper. Amendments include the cancellation of claims 1-8, 13-39 and 52-54, without prejudice; amendments to claims 40, 46-47 and 49-51 and the addition of new claims 55-67.

Listing of the Claims

1-8(canceled).

9(withdrawn). A method as in claim 1 wherein said trending step further comprises constructing a best fit curve from scatter point data.

10(withdrawn). A method as in claim 9 wherein said accumulated data is acquired by measuring each said selected conduction time and logging the values in a periodic repeating programmable basis to produce cumulative data.

11(withdrawn). A method as in claim 10 wherein said one or more sensed parameters are selected from the group consisting of cycle length, activity level and minute ventilation.

12(withdrawn). A method as in claim 11 wherein said cardiac conduction times are selected from (RA-RV), (LA-LV), (RV-LV), (RA-LA), (RA-LV) and (LV_1-LV_2).

13-39(canceled).

40(currently amended). A method of optimizing atrio-ventricular delay over a patient's full range of activity for use in operating an implantable cardiac pacing device comprising the steps of:

(a) measuring atrio-ventricular conduction time for a plurality of beats and logging the values based on ~~a~~ periodic repeating programmable ~~basis~~ sampling intervals to produce cumulative data;

(b) constructing a current template of atrio-ventricular conduction time in relation to one or more other sensed parameters of interest over said full range of patient activity levels from the said cumulative data;

(c) based on a then current template derive a suggested optimum atrio-ventricular delay; and

(d) wherein the data from each measurement is based on a discrete number of beats and is processed by exponential averaging and stored in incremental bins according to the value of the related parameter of interest and wherein a minimum number of beats must be averaged in a minimum number of bins to trigger template generation including updating.

41(original). A method as in claim 40 wherein the parameter of interest is selected from cycle length, activity level and minute ventilation.

42(original). A method as in claim 40 wherein the template is generated based on a best fit mathematical relation between atrio-ventricular conduction time and the parameter of interest.

43(original). A method as in claim 41 wherein the template is generated based on a best fit mathematical relation between atrio-ventricular conduction time and the parameter of interest.

44(original). A method as in claim 40 wherein the template is generated based on a programmed look-up table.

45(canceled).

46(currently amended). A method as in claim ~~27~~ 40 wherein the programmable sampling ~~interval is~~ intervals are such that sampling occurs at different times in successive 24-hour periods, such that eventually sampling occurs throughout said 24-hour period.

47(currently amended). A method as in claim ~~27~~ 40 further including a step of enabling a manual trigger mode that will force trending of atrio-ventricular conduction time during a specific intervention.

48(original). A method as in claim 47 wherein said intervention is a specific exercise test.

49(currently amended). A method as in claim ~~27~~ 40 wherein the collection of ~~A-V~~ atrio-ventricular conduction time data is triggered based on a sensed parameter value.

50(currently amended). A method as in claim ~~27~~ 40 wherein the atrio-ventricular conduction time is measured based on a selected morphological marker of ventricular depolarization and the atrio-ventricular delay is increased above the intrinsic atrio-ventricular delay during such measurements.

51(currently amended). An implantable cardiac rhythm management device programmed to operate in accordance with claim ~~1~~ 40.

52-54(canceled).

55(new). A method as in claim 40 wherein said cardiac conduction time is selected from (RA-RV), (LA-LV) and RA-LV).

56(new). A method as in claim 40 further comprising the step of programming the suggested optimum atrio-ventricular delay into the operation of said pacing device.

57(new). A method as in claim 40 further including the step of periodically updating said template with new atrio-ventricular conduction time data to construct a new current template.

58(new). A method as in claim 57 further comprising the step of changing the atrio-ventricular delay automatically when the template is updated with a new atrio-ventricular conduction time delay.

59(new). A method as in claim 40 wherein said suggested optimum atrio-ventricular delay is a dynamic atrio-ventricular delay that changes as a function of one or more of said sensed parameters of interest.

60(new). A method as in claim 41 wherein said suggested optimum atrio-ventricular delay is a dynamic atrio-ventricular delay that changes as a function of one or more of said sensed parameters of interest.

61(new). A method as in claim 40 wherein said suggested optimum atrio-ventricular delay is a fixed atrio-ventricular delay.

62(new). A method as in claim 58 wherein said suggested optimum atrio-ventricular delay is a fixed atrio-ventricular delay.

63(new). A method as in claim 40 wherein the measurement of said atrio-ventricular conduction time includes lengthening the then current AV delay so that intrinsic measurements can be made.

64(new). A method as in claim 47 wherein the measurement of said atrio-ventricular conduction time includes lengthening the then current AV delay so that intrinsic measurements can be made.

65(new). A method as in claim 49 wherein the measurement of said atrio-ventricular conduction time includes lengthening the then current AV delay so that intrinsic measurements can be made.

66(new). A method as in claim 40 wherein said periodic repeating programmable sampling intervals require a minimum time between data acquisition.

67(new). A method as in claim 40 wherein data acquisition must be enabled in the manner of a predetermined routine.